CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 89-028

SITE CLEANUP REQUIREMENTS FOR:

HEWLETT PACKARD
DEER CREEK ROAD
PALO ALTO
SANTA CLARA COUNTY

STANFORD UNIVERSITY
PALO ALTO
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board), finds that:

1. Hewlett-Packard operates a research and testing laboratory at 3500 Deer Creek Road, Palo Alto, Santa Clara County. Hewlett-Packard leases this site from Stanford University the current owner of the site. (Hewlett-Packard and Stanford University are hereinafter referred to as the dischargers).

2. Site Cleanup Requirements were adopted for this site on February 19, 1986. These requirements specified a schedule for site pollution characterization and interim remediation and for the preparation of a final cleanup plan.

3. The facility consists of Building 25, Building 26, and a small chemical storage building constructed south of Building 25 as shown on Attachment 1, Site Plan, hereinafter a part of this Order. Building 25 was constructed in 1970 by Fairchild Camera and Instrument Company. In 1985, Hewlett-Packard constructed Building 26. The site has been leased by Hewlett-Packard since 1972.

4. The site is located in the foothills of the Santa Cruz Mountains west of Deer Creek Road Between Page Mill and Arastradero Roads. The regional groundwater gradient is easterly from the site toward San Francisco Bay; however, a localized westerly hydraulic gradient exists in the shallow flow zones across the site toward Deer Creek. Approximately 3/4 mile north of the site, Deer Creek joins Matadero Creek, which flows eastward through the City of Palo Alto in the Matadero Canal to Mayfield Slough, an extention of South San Francisco Bay.

5. In 1975 Hewlett-Packard installed a 2000 gallon capacity tank to store waste organic solvents generated by facility processes. The organic solvents included trichloroethylene (TCE), xylene, isopropanol, methanol, and acetone. In October 1980 Hewlett-Packard discovered that this tank had developed a leak. In February 1981, a preliminary investigation, consisting of four shallow borings drilled within a 20-foot radius of the tank, showed that pollutants had migrated into the soil. Subsequent investigation found TCE in the groundwater at concentrations as

high as 310,000 ppb and trans-1,2-dichlorethene (DCE) at concentrations as high as 120,000 ppb. In April, 1981 the damaged tank and approximately 40 to 50 cubic yards of polluted soil were removed.

6. The site buildings are situated on a hillside that slopes down steeply at the edge of a parking lot about 12 feet to the creek terrace area west of the buildings. The tank was removed from the eastern edge of the parking lot in a region found to be underlain by the continental Santa Clara Formation. A thin clay layer encountered in this area at about 34 feet below the surface is believed to retard pollutant migration to deeper aquifers. A second clay layer, occurs in the vicinity of the solvent tank leak at an approximate depth of 70 feet. Low levels of TCE (2ppb) were detected in the saturated unit between the two clay layers near the source.

7. The thin upper clay layer, as noted in Finding No. 6, does not extend beneath the terrace. However, other units of the Santa Clara Formation, including the second deeper clay layer, appear to be continuous beneath the terrace. Groundwater concentrations of VOC's in the saturated unit above the second clay layer have been detected as high as 2300 ppb for TCE.

8. Since February 1983 water from Deer Creek has been sampled and analyzed quarterly for several compounds. Concentrations of trans-1,2-DCE ranging from 3-98 ppb, and TCE ranging from 6 to 27 ppb have been detected in samples taken from the portion of the stream directly across from the site. Samples taken at Coyote Bridge approximately seven-tenths of a mile downstream from the site have consistently indicated non-detectable levels of pollutants.

9. During the course of the groundwater characterization 26 monitoring wells have been constructed. Four of these wells were designed for groundwater extraction and seven wells monitor the deeper water bearing zone. Adequate information exists for characterizing the extent of soil and groundwater pollution. Chemicals have migrated in groundwater approximately 750 feet from the source in a northwesterly direction towards Deer Creek. The plume is approximately 300 feet wide immediately downgradient of the source area. The plume is significantly affected by site hydrogeologic conditions. Groundwater near the surface typically flows in a downhill direction towards the creek. Vertically chemicals are restricted to a depth of 35 feet near the source due to a continuous clayey unit at this depth. Groundwater from this depth flows toward soils of higher transmissivity at the creek terrace. Because of this higher transmissivity at the creek terrace, VOC's have been found in three of the deeper wells at approximately 60 feet deep.

10. The extraction wells located near the source area have all typically been low yielding. From February 1982 to January 1986 groundwater was pumped at a rate of 0.1 to 0.5 gpm from well B-4, located on the western side of the parking lot. A second

extraction well, well B-13, has been used since December 1985. Initially, well B-13 was pumped at 1.0 gpm, but after a period of approximately one year the discharge rate began to decrease to the current rate of 0.3 gpm.

11. The extracted groundwater is piped to an existing scrubber located at the second floor of Building 25. This treatment reduces solvent concentrations to levels acceptable for discharge to the City of Palo Alto sanitary sewer system.

12. There are 11 municipal wells within a three-mile radius of this site; the closest is 1.8 miles from the site. Five of these are located in Los Altos and are used to augment the city water supply during periods of peak demand. The remaining 6 are reserve back-up wells for the City of Palo Alto. All of these wells are screened at depths greater than 200 feet.

13. There are several private wells in the surrounding areas. The closest of which is less than one half of a mile from the site. None of these are located within the known plume of groundwater pollution from this site.

14. The discharger submitted an evaluation of final treatment alternatives as required by Regional Board Order 86-1. This plan contains a proposed final remediation plan, proposed remediation levels, a remediation alternatives evaluation, and a public health evaluation. The objectives of the plan are to 1) protect public health and the environment, 2) be technically feasible, and 3) be cost effective. The discharger evaluated five alternatives:

    1. The no action alternative including shutting down the current extraction well and treatment system.

    2. Treatment of polluted soils by vapor extraction and source area groundwater extraction.

    3. Same as alternative two with the addition of groundwater extraction at the creek terrace.

    4. Same as alternative three except remediation of polluted soils by excavation.

    5. Same as alternative four with additional source soils excavation and additional groundwater treatment by biological treatment followed by granular activated carbon prior to discharging to the storm sewer.

    The discharger recommended alternative No.4, source area soil excavation with both source area groundwater extraction and groundwater extraction at the creek terrace area. In a letter dated July 29, 1988 the Regional Board Staff stated that the selected remedial action alternative (No. 4) was conceptually acceptable.

15. On September 13, 1988 Hewlett-Packard submitted the report titled "Pre-excavation Investigation Report" which proposed the boundaries for soil-excavation at the source area. Regional Board Staff accepted this excavation proposal in a letter dated October 5, 1988. Hewlett-Packard completed this excavation by November 8, 1988.

16. The dischargers proposed groundwater cleanup goals are to reduce chemical concentrations in groundwater beneath the source area to levels less than or equal to 100 times the DHS Action Levels for drinking water and to reduce chemical concentration in groundwater at the creek terrace to levels less than or equal to DHS Action levels. These remediation goals may be reached within ten to twenty years.

17. The Regional Board staff recommends and the Board agrees that a groundwater cleanup goal of the DHS Action Level for all water bearing zones affected by the discharge for the following reasons:

    -Both the source area and the creek terrace area are potential sources of drinking water based on State Board Resolution 88-63. These goals would then protect this beneficial use of groundwater on the site.

    -The creek terrace groundwater will be remediated sooner if the source area groundwater which charges the terrace groundwater is remediated to the drinking water action levels.

18. The Regional Board intends to strongly encourage, and require to the extent allowed by law, the maximum reuse of extracted groundwater feasible either by the discharger or other public or private water users.

19. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives for South San Francisco Bay and contiguous surface and groundwaters.

20. The existing and potential beneficial uses of the groundwater underlying and adjacent to the dischargers facilities include:

    a. Industrial process water supply
    b. Industrial service supply
    c. Agricultural supply
    d. Municipal and domestic supply

21. The existing and potential beneficial uses of Deer Creek include:

    a. non-contact water recreation
    b. warm freshwater habitat
    c. wildlife habitat
    d. agricultural supply

22. The dischargers caused or permitted waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

23. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

24. The Board has notified the dischargers and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharges and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

25. The Board, at a public meeting, heard and considered all comments pertaining to this discharges.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS:

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS:

1. The storage, handling, treatment or disposal of polluted soil or groundwater shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The dischargers shall conduct monitoring activities as needed to define the local hydrogeolocical conditions, and the lateral and vertical extent of the soil and groundwater pollution. Should monitoring results show evidence of plume migration additional plume characterization of pollutant extent shall be required.

3. Final remediation levels for each chemical concentration in the groundwater beneath the creek terrace shall be equal to or less than each chemical concentration as listed in Table 1.

The discharger may request that the Board modify the cleanup levels for groundwater in the source area. This request shall be based on an acceptable demonstration of infeasibility to achieve the cleanup lelvels specified in this Order utilizing both source area and creek terrace area groundwater data. This request shall not be made until after groundwater remediation has reached the levels proposed by the discharger in their Evaluation of Final Cleanup Alternatives as described in Finding 16.

4. The discharger shall remediate soil to an average concentraton of 1 ppm TCE. This goal may be modified by the Regional Board if the discharger demonstrates with site specific data that higher levels of chemicals in the soil will not threaten the quality of waters of the State.

5. The discharger shall implement the final remediation plan as described in Finding 14, as modified by Finding 17.

C. PROVISIONS:

1. The dischargers shall submit to the Board acceptable monitoring program reports containing results of work performed according to a program prescribed by the Board's Executive Officer.

2. The dischargers shall comply with this Order immediately upon adoption with the exception that the discharger shall comply with Prohibitions A.1., A.2., and A.3., and Specifications B.1. to B.5. as modified in accordance with the following time schedule and tasks:

COMPLETION DATE/TASK:

a. 1) COMPLETION DATE: April 17, 1989
TASK: **GROUNDWATER REUSE PLANS**
Submit a technical report acceptable to the Executive Officer which contains a description of the groundwater reuse plans associated with implementation of the final remediation plan. The report should include an examination of potential water resuses such as addition to the facilities industrial supply, or reasons why this water cannot be resused.

2) COMPLETION DATE: April 17, 1989
TASK: **WELL LOCATION PROPOSAL AND SAMPLE PLAN:**
Submit a technical report acceptable to the Executive officer containing a proposal for the location of extraction well networks at both the

source area and creek terrace area. Included shall be a proposal for hydrologic tests conducted to confirm zone of capture and cone of depression of the extraction well pumping system. This report shall include a Sample Plan addressing construction, hydrologic testing, and long term monitoring.

3) COMPLETION DATE: April 17, 1989

TASK: **BAAQMD APPLICATION**-Submit a technical report acceptable to the Executive Officer which contains a description of the application filed with the Bay Area Air Quality Management District for the groundwater treatment system.

4) COMPLETION DATE: September 15, 1989

TASK: **COMPLETION OF EXTRACTION WELL SYSTEMS** Submit a technical report acceptable to the Executive Officer documenting the construction and commencement of operation of the groundwater extraction and treatment systems including acquisition of long term POTW discharge permit if required.

b. 1) COMPLETION DATE: March 28, 1989

TASK: **COMPLETION OF SOIL EXCAVATION**-Submit a technical report acceptable to the Executive Officer documenting the completion of source area soil excavation.

c. 1) COMPLETION DATE: Four months before expected termination

TASK: **EXTRACTION WELL TERMINATION**-Submit a technical report acceptable to the Executive Officer which contains a proposal for termination and/or destruction of extraction wells and the criteria used to justify extraction well termination. The proposal shall include temporary curtailment of extraction well operation for an extended period of time to study the effects on pollutant migration prior to extraction well termination.

2) COMPLETION DATE: 60 days after concentration increase is confirmed.

TASK: **EXTRACTION WELL POLLUTANT CONCENTRATION INCREASE** Submit a technical report acceptable to the Executive Officer documenting a significant increase in pollutant concentrations at the

extraction wells. This report shall also contain a proposal for additional measures to contain and treat the pollutant plume if necessary.

d. 1) COMPLETION DATE: One month after release confirmation notification.

TASK: **ADDITIONAL REMEDIATION PROPOSALS** Submit a technical report acceptable to the Executive Officer which proposes additional remediation for new or recently identified sources of soil or groundwater pollution on the site. This report shall evaluate the removal and/or cleanup of polluted soils; evaluate the containment and remediation of polluted groundwater.

2) COMPLETION DATE: As determined by the Executive Officer.

TASK: **COMPLETION OF ADDITIONAL REMEDIATION** - Submit a technical report acceptable to the Executive Officer which documents completion of the accepted additional remediation measures.

e. 1) COMPLETION DATE: February 18, 1994

TASK: **FIVE YEAR STATUS REPORT AND EVALUATION** Submit a technical report acceptable to the Executive Officer containing an evaluation of the final remedial measures. The evaluation shall include an estimation of the flow capture zone of the extraction wells, establishment of the cones of depression by field measurements, and an evaluation of chemical monitoring data.

3. If the dischargers are delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the dischargers shall promptly notify the Executive Officer and the Board may consider revision to this Order.

4. Technical reports on compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted monthly to the Board commencing with the report due April 3, 1989 monitoring the previous months activities. On a monthly basis thereafter, these reports shall consist of a letter report that, (1) summarizes work completed since submittal of the previous report, and work projected to be completed by the time of the next report, (2) identifies any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) includes, in the event of non-compliance with Provision C.2. or any other Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance

and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order.

On a quarterly basis, commencing with the report due July 1, 1989 the monthly reports shall include, but need not be limited to, updated water table and piezometric surface maps for all affected water bearing zones, cross-sectional geological maps describing the hydrogeological setting of the site, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures.

5. The dischargers shall submit to the Board technical reports acceptable to the Executive Officer containing Site Safety Plans, and Site Sampling Plans.

6. Site Sampling Plans and Site Safety Plans shall be submitted for Provisions C.2.a.2., C.2.d.1. The Site Safety Plans, and Site Sampling Plans shall consider CERCLA guidance documents.

7. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer. This requirement shall not apply to monthly reports and quarterly progress reports provided the hydorgeological information contained in these reports has been submitted or is scheduled for submittal by a registered geologist, engineering geologist, or professional engineer.

8. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Executive Officer using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

9. The dischargers shall maintain in good working order, and operate as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

10. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:

    a. Santa Clara Valley Water District
    b. Santa Clara County Health Department
    c. City of Palo Alto
    d. State Department of Health Services/TSCD
    e. U. S. Environmental Protection Agency, Region IX T41

The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to be provided to a local repository for public use.

11. The dischargers shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

    a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

    b. Access to copy any records required to be kept under the terms and conditions of this Order.

    c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

    d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

12. The discharger(s) shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.

13. If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state, the dischargers shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

14. The Board will review this Order periodically and may revise the requirements when necessary.

15. Regional Board Order No. 86-01 is hereby rescinded.

I, Steven R. Ritchie Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 15, 1989.

Steven R. Ritchie
Executive Officer

TABLE 1

TARGET REMEDIATION GOALS FOR THE SOURCE AREA AND CREEK TERRACE GROUNDWATER

Chemical	Concentration (ppb)	Source of Goal
trichloroethylene (TCE)	5	DHS Action Level
1,1,1-trichloroethane (TCA)	200	DHS Action Level
Freon 113	18,000	DHS Action Level
toluene	100	DHS Action Level
Acetone	3,500	(see footnote 1)
Isopropanol	2,250	(see footnote 2)
Xylenes	620	DHS Action Level
1,2-dichlorobenzene	130	DHS Action Level
trans-1,2-dichloroethylene	16	DHS Action Level
1,1-dichloroethene (1,1-DCE)	6	DHS Action Level
1,1-dichloroethane (1,1-DCA)	20	DHS Action Level
vinylchloride	2	DHS Action Level

footnote

1. MCLs and DHS Drinking Water Action Levels have not been established for this chemical. The value for acetone is established based on the oral reference dose (Rfd) in the Integrated Risk Management Information System (IRIS).

2. MCLs and DHS Drinking Water Action Levels have not been established for this chemical. This value is determined from a medthod specified in the Calif. DHS Decision Tree Manual.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

HEWLETT-PACKARD
DEER CREEK ROAD FACILITY
GROUNDWATER SELF-MONITORING PROGRAM

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a waste discharger's monitoring program, also referred to as a self-monitoring program, are: (1) To document compliance with waste discharge requirements and prohibitions established by this Regional Board, (2) To facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) To develop or assist in the development of effluent or other limitations, discharger prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) To prepare water and wastewater quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the EPA Method 8000 series described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", dated November 1986; or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations of Requirements

In the event the discharger is unable to comply with the conditions of the waste discharge requirements and prohibitions due to:

a. maintenance work, power failures, or breakdown of waste treatment equipment, or

b. accidents caused by human error or negligence, or

c. other causes such as acts of nature, or

d. poor operation or inadequate system design.

The discharger shall file a written technical report at least 15 days prior to advertising for bid on any construction project which would cause or aggravate the discharge of waste in violation of requirements; said report shall describe the nature, costs and scheduling of all action necessary to preclude such discharge.

In addition, if the noncompliance caused by items (a), (b), (c) or (d) above is with respect to any of the order's limits, the waste discharger shall promptly accelerate the monitoring program to weekly or as required by the Board's Executive Officer for those constituents which have been violated. Such analysis shall continue until such time as the effluent limits have been attained, or until such time as the Executive Officer determines to be appropriate. The results of such monitoring shall be included in the regular Self-Monitoring Report.

2. Bypass Reports

Bypass reporting shall be an integral part of the regular monitoring program report. A report on bypassing of untreated units shall be made which will include cause, time and date, duration and estimated volume bypassed, method used in estimating volume, and persons and agencies notified. Notification to the Regional Board shall be made immediately by telephone (415-464-1255), followed by a written account within 15 days.

3. Self-Monitoring Reports

a. Reporting Period:

(1). Written reports shall be filed regularly each quarter within forty-five days from the end of the quarter monitored.

(2). A written report containing data for the compliance points specified in order 89-028 shall be submitted monthly within three weeks from the end of the month monitored.

b. Letter of Transmittal:

A letter transmitting self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period and actions taken or planned for correcting any requirement violation. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by either a principal executive officer or his duly authorized employee. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

c. Data Results:

(1). Results from each required analysis and observation shall be submitted in the quarterly self-monitoring regular reports. Results and Hazard Indices from compliance points listed in the Order shall also be submitted in the monthly report. All chromatographic peaks for purgeable

halocarbons and/or volatile organics shall be identified and quantified in the quarterly and monthly regular reports, if a peak is identified in two consecutive samples. A GC/MS analysis shall be performed and all peaks identified and reported on each well according to Table 1 and on each new well immediately after installation and well development. Results shall also be submitted for any additional analyses performed by the dischargers at the specific request of the Board for parameters for which effluent limits have been established and provided to the dischargers by the Board.

(2). The quarterly and, if noncompliance occurs, the monthly reports shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.

(3). The quarterly report shall also identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the Executive Officer. Any special methods shall be identified and should have prior approval of the Board's Executive Officer.

(4). Hewlett-Packard shall describe, in the quarterly SMR, the reasons for significant increases in a pollutant concentration at a well onsite. The description shall include:

1). the source of the increase,

2). how Hewlett-Packard determined or will investigate the source of the increase, and

3). what source removal measures have been completed or will be proposed.

(5). Original lab results shall be retained and shall be made available for inspection for three years after origination or until after all continuing or impending legal or administrative actions are resolved.

(6). A map shall accompany the quarterly report, showing all sampling locations.

(7). Hewlett-Packard shall describe in the quarterly monitoring report the effectiveness of the actions taken to regain compliance if compliance is not achieved. The effectiveness evaluation shall include the basis of determining the effectiveness, water surface elevations for each well used to determine water surface elevation contours and water quality data.

(8). The annual report shall be combined with the fourth

quarter regular report and shall include cumulative data for the current year. The annual report for December shall also include average Hazard Indices and minimum, maximum, median and average water quality data for the year.

d. SMP Revisions:

Additional long term or temporary changes in the sample collection frequency and routine chemical analysis may become warranted as monitoring needs change. These changes shall be based on the following criteria and shall be proposed in a quarterly SMR. The changes shall be implemented no earlier than 45 days after self-monitoring report is submitted for review or not at all if the proposal is found to be unacceptable.

Criteria for SMP revision:

(1). Discontinued analysis for a routine chemical parameter for a specific well after a one-year period of below detection limit values for that parameter.

(2). Changes in sampling frequency for a specific well after a one-year period of below detection limit values for all chemical parameters from that well.

(3). Temporary increases in sampling frequency or changes in requested chemical parameters for a well or group of wells because of a change in data needs (e.g., evaluating groundwater extraction effectiveness or other remediation strategies).

D. DESCRIPTION OF SAMPLING STATIONS

Groundwater

Stations	Description
Listed in Table 1	Monitoringwells, observation wells, extraction wells and creek sampling stations.

E. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be given in Table 1.

I, Steve R.Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data established in Regional Board Order No. 86-01 and Order No. 89-028.

2. Is effective on the date shown below.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the dischargers and revisions will be ordered by the Executive Officer.

Steven R. Ritchie
Executive Officer

Effective Date: February 15, 1989

Attachments: Table 1

TABLE 1
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

SAMPLING STATION >>	B13	B14	B19	B20	B22	B25	B3	B8	B12	B15	B21	B24	D1	D2	D3
TYPE OF SAMPLE	G														
Flow Rate (gal/day)															
pH (units)															
Temperature (deg. C)															
EPA 8010/8020 for: purgeable priority pollutants	Q						2/Y						Q		
GC/MS Scan(EPA 8240)	1/Y*														

LEGEND FOR TABLE 1

G = grab sample
D = once each day
M = once each month
Q = quarterly, once in March, June, September and December
M/Q = monthly for three months at startup of operation; reduced to quarterly thereafter
2/Y = Once in March and once in September
1/Y = once per year

* EPA 601/602 not required for months when EPA 624 is performed.